

## **TWENTY TWO YEARS OF ENVIRONMENTAL SURVEILLANCE AT CENTRO EXPERIMENTAL ARAMAR**

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Since 1988, CTMSP - Centro Tecnológico da Marinha em São Paulo - maintains a comprehensive environmental surveillance program at CEA - Centro Experimental Aramar. CEA is located in the State of São Paulo, in the county of Ipero, which is about 130 km from the capital city of São Paulo, Brazil. CEA is a major nuclear research center responsible for the development of nuclear technology in Brazil. The nuclear installations in operation today at the CEA site are two enrichment plants and a nuclear material laboratory. In the near future CEA will start the operation of an uranium hexafluoride production plant. A 48 Mwth prototipe pressurized water reactor is also under construction at the CEA site. This reactor is expected to enter operation around 2014.

The present CEA Environmental Surveillance Program (ESP) encompasses radiological and non radiological survey of an area of about 10 km radius around the site. The purpose of the ESP program is to monitor the various pathways by which the environment and the public could be exposed to radioactive and non radioactive contaminants released from CEA. Atmospheric, terrestrial, aquatic and direct radiation pathways are monitored. Routine sampling of foodstuffs ( milk, beans, etc) , bottom sediments, soils , fish, air, surface and underground water sources are performed. The present radiological surveillance program includes measurements of the naturally occurring radionuclides of the U238 and Th232 series, which are potential components of the liquid and gaseous effluents released to the environment from nuclear fuel cycle facilities in operation at the CEA site. The non radiological monitoring program consists of assessing ground water and surface water quality, and rain water.

The Environmental Surveillance Program conducted by CTMSP must comply with the regulatory standards of the Brazilian National Nuclear Energy Commission (CNEN) which is responsible for conducting the licensing process for nuclear installations in Brazil. The ESP program must also comply with the regulatory standards of the Brazilian Environmental Protection Agency (IBAMA).

This paper presents a brief description of the Environmental Surveillance Program set up by CTMSP. Results obtained from the ESP program over the last twenty two years of environmental surveillance are presented and discussed. The results indicate that no public or environmental radiological impact has yet been detected in the environs of the CEA site due to the operation of nuclear nuclear facilities in operation at the CEA site.